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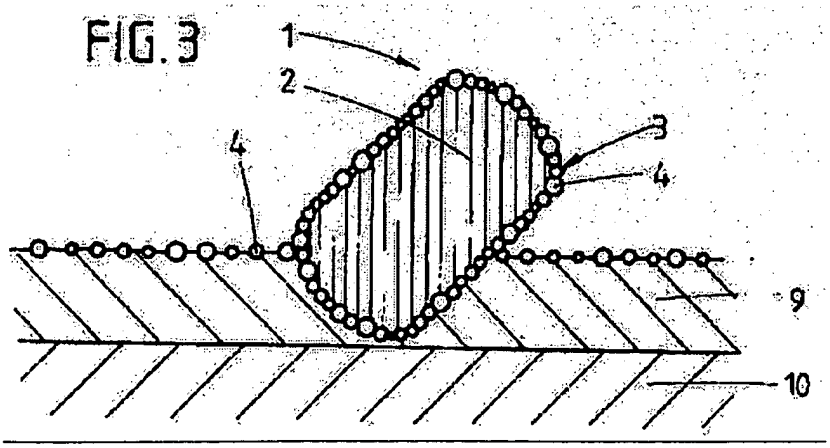
Reflective Body, to be used specifically for road markings.

Laid open is a reflective body (1; 5) to be used for road markings (9) that possesses a granulate like, grid like, or platelet like elastic carrier (2; 6) that is equipped with a coating (3; 7) that is comprised of fine, micro-sized glass beads (4; 8).

FIG. 3



The invention is specifically concerned with reflective bodies to be used for road markings that reflect the light that is emitted from the headlights of vehicles that drive on such a road to ensure that said road markings are better visible at night.

It is known to embed reflective bodies in the form of glass beads into road markings that are applied to the road surface in such a manner that one sprinkles them onto the freshly applied road markings and thus allows them to sink into said markings bfore they solidify, respectively cure. For the case that one utilizes so called micro sized glass beads, which means, glass beads that possess a very small diameter, one achieves a good adherence of said glass beads to, respectively, in the material that is used for said road markings. However, the disadvantage will happen herewith that the top surfaces of the glass beads that protrude out of the marking will disappear under a water film that is created for the case that the road surfaces are wet from rainfall, and thus causes that the reflection of the oncoming light of a vehicle is heavily reduced, or totally inhibited. Because of the fact that the road surface of a road that is wet from rainwater appears to be even darker, road markings with embedded micro sized glass beads will become mostly invisible during rainfall.

However, for the case that one equips the road marking with larger glass beads that are utilized as reflective bodies, and which have such a large diameter that they also protrude out of the water film that is created on the road surface during a heavy rain down poor, the disadvantage occurs that such glass beads will loosen from of their supporting surface rather quickly, and that they will be torn out of the material of the road markings by the tires of the vehicles passing over them. Because of this situation, road markings that are equipped with such versions of large glass beads that are used as reflective bodies, will not last very long, but will become mostly invisible in rainy conditions after a rather short time duration.

The scope of the invention is to create a reflective body that is specifically suitable for markings that are applied in the form of road markings onto an asphalt surface or driving surface of a road, and that ensures a good degree of reflection of the light that is emitted from the headlights of vehicles that are present on said road also on road surfaces that are wet from rainwater, and that such markings will be durable, respectively that they ensure long operating durations.

According to the invention, said scope will be solved with the support of a reflective body of the above-mentioned kind that possesses the characteristics of the identification section of the claim 1. Advantageous execution versions and further developments of the invention are subjects of the sub-claims.

Reflective bodies that are produced following the invention, create a kind of a granulate with which cores or carriers are provided with a sturdy encasing of micro sized, reflective glass beads. For the case that one embeds such reflective bodies into road markings, the micro sized, reflective glass beads of the individual granulate like reflective bodies increase the retroflection of the marking, specifically also with wet driving road surfaces and when its dark.

Because of a special construction of the assembly, the reflective bodies in the marking layers are multi reflectors, and they ensure a complex solution for the problems of modern marking systems. By means of the reflective bodies that are produced according to the invention, an optimized assembly of micro sized, reflective glass beads

and thermoplastic carrier body is ensured, which allows for the creation of an elastic road marking system with long lasting durability.

It is possible to practically utilize the reflective bodies that are produced according to the invention in several different ways. They are suitable, for example as a later applied sprinkle on granulate for lasting markings. However, it is preferred that they are utilized in special marking materials that have a layer thickness of at least 800µ, to ensure that the reflective bodies that have, in their largest version, a diameter of up to 2mm, will always protrude adequately enough over the surface of the road marking, to ensure that they are still visible, and are still able to reflect the light of approaching vehicles for those cases in which the road, respectively the driving lanes are either moist or wet, or even covered with a water film. This provides quite some advantage for the vehicle drivers, specifically in the dark.

An execution example of the reflective body that is produced following the invention is displayed in a schematical manner in the drawing. Displayed is in:

Fig. 1 a cut through such a reflective body in a rather large, enlarged dimension,

Fig. 2 a similar cut as the one displayed in Fig. 1, with which the carrier of the reflective body that consists of a thermoplastic material, and that creates the core of the reflective body, and that also contains micro glass beads in its interior, and

Fig. 3 a cut like the ones of the Figs. 1 and 2 through a reflective body that is produced following the invention, and herewith, said reflective body is embedded into a road marking system that is applied to a driving lane of a road.

The reflective body 1 that is displayed in Fig. 1 possesses a carrier 2 that creates the core of said body, and the carrier consists of a thermoplastic material that is encased in a coating 3 that consists of a multiple number of micro glass beads 4.

The reflective body 5 that is displayed in Fig. 2 also possesses a carrier 6 that creates the core, and an encasement 7 that consists of micro glass beads is located on top of it. This reflective body differs from the reflective body that is made according to Fig. 1 in so far as the carrier 6 that consists of a thermoplastic material also contains micro glass beads 6 in its interior; which means, it is filled with micro glass beads. For the case that the top surface of the encasement 7 that creates these reflective bodies 5 gets worn away, there will always be an adequate amount of micro glass beads 8 available at the surface that the desired retro reflective action will be ensured.

Fig. 3 shows the manner in which a reflective body 1 is anchored in a thin layered road marking 9 that is present on a driving lane surface of said road which consists of asphalt. Herewith, it can be observed that the encasement 3 of the reflective body 1 that consists of micro glass beads 4 protrudes much further above the top surface of the road marking 9 than is the case with micro glass beads 4 that are sprinkled onto the surface of the road marking 9. Herewith, it is possible that said sprinkled on micro glass beads 4 can be projected to be additionally present on the top surface of said road markings 9 that are applied to the road surfaces, and they can be located in between the reflection bodies 1, respectively 5.

The display of Fig. 3 is exaggerated concerning its dimension in the same way as is the

case with the Figs. 1 and 2, to be able to make the reflective bodies 1 on top, respectively in a road marking 9 better visible to the observer. Herewith, it is also not required that the reflective bodies 1, respectively 5 possess the elongated shape that can be observed in the drawing. It is rather possible herewith, that said reflective bodies can posseses any spatial shape. Of importance herewith is that micro glass beads are projected to be present on a carrier that consists of a thermoplastic material, and that said micro glass beads protrude clearly out over the top surface of the road marking 9.

The reflective bodies 1, respectively 5 are preferably poured onto the top surface of a road marking 9 prior to the moment that this has solidified, respectively that this became hard, to ensure that said reflective bodies that are displayed in Fig. 3 by means of a single reflective body, can sink into the road marking 9 by way of the displayed manner.

The distance between two adjacent reflective bodies 1, respectively 5 at, respectively on a road marking system 9 can be selected randomly, and thus it can be arbitrary. Because of this fact, it is possible that one can pour a multiple amount of such reflective bodies on to the top surface of a road marking system , and that one thus attaches said reflective bodies to said system.

Because of the fact that the reflective bodies 1, respectively 5 are each enveloped with an encasement 3, respectively 7 that consists of micro-sized glass beads, they do not possess a smooth surface, but one that provides a certain traction, which basically allows for a shape adapted, and thus very durable embedding into the road marking system.

Patent Claims

1. A reflective body (1; 5) specifically suitable for road markings (9), characterized in such a way that it possesses a granulate like, grid like, or platelet like, elastic carrier (2; 6) that is provided with a coating that consists of micro-sized glass beads (4; 8).
2. A reflective body according to claim 1, characterized in such a way that the carrier (2; 6) consists of a thermoplastic resin material, such as polyethylene, or polypropylene, or of other thermoplastic road marking system materials.
3. A reflective body according to the claims 1 or 2, characterized in such a way that the glass beads (4; 8) are embedded into the carrier (2; 6) at the top surface of said carrier.
4. A reflective body according to claim 3, characterized in such a way that the glass beads (4; 8) are sunk into the top surface of the warmed up carrier (2; 6).
5. A reflective body according to the claims 1 through 4, characterized in such a way that the carrier (6) is interspersed with micro-sized glass beads
6. A reflective body according to the claims 1 through 5, characterized in such a way that it largest diameter is up to 2 mm.

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FIG.1

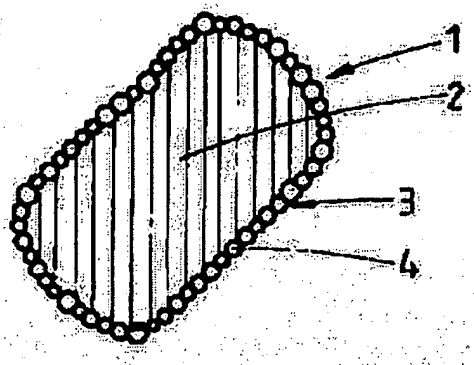

FIG.2

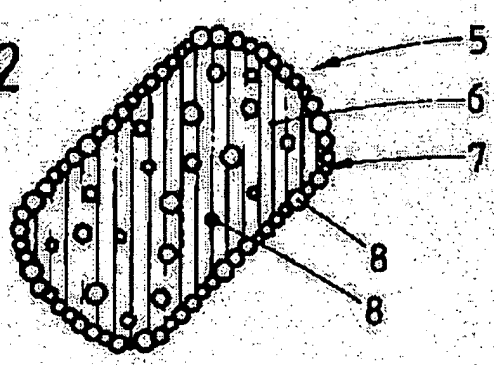

FIG.3